

Five Species of Nanhermanniidae (Acari: Oribatida) from Nippon

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Abstract Three new species and two known species of the genus *Nanhermannia* were recorded from *Fagus* and *Picea* forests in Nippon.

Key words: Mt. Hayachine, *Nanhermannia*, new species, Oribatida, Shirakami-sanchi

Five species of the genus *Nanhermannia* were collected from forest floor of a natural *Fagus* forest at the Shirakami-sanchi World Heritage Area and a natural *Picea* forest at Mt. Hayachine. Three species of them were described as new species, and these new species had the following characters in common, namely, (1) body color dark reddish brown, (2) body surface bearing areolae variable in size and form, (3) rostrum rounded with an inside sclerotization and setae *ro* originating from the anterior margin, (4) prodorsum with defined central area and prodorsal condyle, bearing areolae and finely punctuations; prodorsal condyles lath-like with several small teeth, (5) setae *ro*, *le* and *in* simple and smooth; setae *le* extending for a short distance beyond the insertions of setae *ro*, (6) sensilli composed of a smooth stem and weakly fusiform head which bears spines, (7) notogaster elliptical in shape, bearing 15 pairs of smooth and long setae; setae with a short posterior spur, (8) lyrifissures *ih*, *ips*, *iad* and *ian* present, (9) setal formula of ano-genital region: (2–3–9–2); all setae smooth, (10) acetabular tectum with dents, (11) setal formula of epimerata: (3–1–3–4), (12) chaetotaxy of pedipalp: (0–1–0–1–7 [1]), (13) every one of infracapitular setae *a*, *m* and *h* one pair, (14) stenarthric subcapitulum, (15) legs monodactyle; claws thick and smooth without dent, (16) leg solenidiotaxy: I (1–2–3); II (1–1–2); III (1–1–0); IV (1–1–0), (17) solenidia ω_1 on tarsus I, ψ_1 on tibia I, and σ on genu I bacilliform, coupled with dorsal seta, (18) famulus on tarsus I spiniform, inserted between ω_1 and other solenidia.

All specimens are females. Types with number of NSMT-Ac are deposited in the National Science Museum,

Tokyo. The following marks are used for the sampling localities in the present paper: FA: L, H, F and A layers at the forest floor of a natural *Fagus crenata* BLUME forest at the Shirakami-sanchi World Heritage Area in Aomori prefecture, T. FUJIKAWA, PG: L, H, F and A layers at the forest floor of a natural *Picea glehnii* MASTERS forest on Mt. Hayachine in Iwate prefecture, T. FUJIKAWA.

Nanhermannia angulata sp. nov.

[Nipponese name: Kado-tsukinowadani]

(Figs. 1 A & 2)

Measurements: Body length, 464 – 471 μm ; width, 214 μm .

Prodorsum: Prodorsal condyles medially connected. Rostral and lamellar setae thick like bacilliform but sharply pointed. Setae *ro* about twice and setae *le* about 1.5 \times as long as their mutual distance. Setae *in* thicker posterior, about 2.5 \times as long as their mutual distance, shorter than 2/3 but longer than half of length of prodorsum. Sensilli heavily spinose on distal half. Setae *ex* almost smooth, bearing a thorn. Relative lengths and distances: $in \doteq 2 \times le \doteq 2 \times ss > ro > ex$; $(le-le) > (in-in) > (ro-ro)$.

Notogaster: Areolae on surface angular. Setae *c*₁ about 4.5 \times as long as their mutual distance and about 2 \times as long as the distance between *c*₁ and *d*₁.

Ventral region: Setal formula of epimera: (3–1–3–4) normally, (3–1–3–5) abnormally; all setae sparsely and minutely barbed; seta *a* of each epimeron short but the others long; setae *1a* the shortest and setae *4b* the longest;

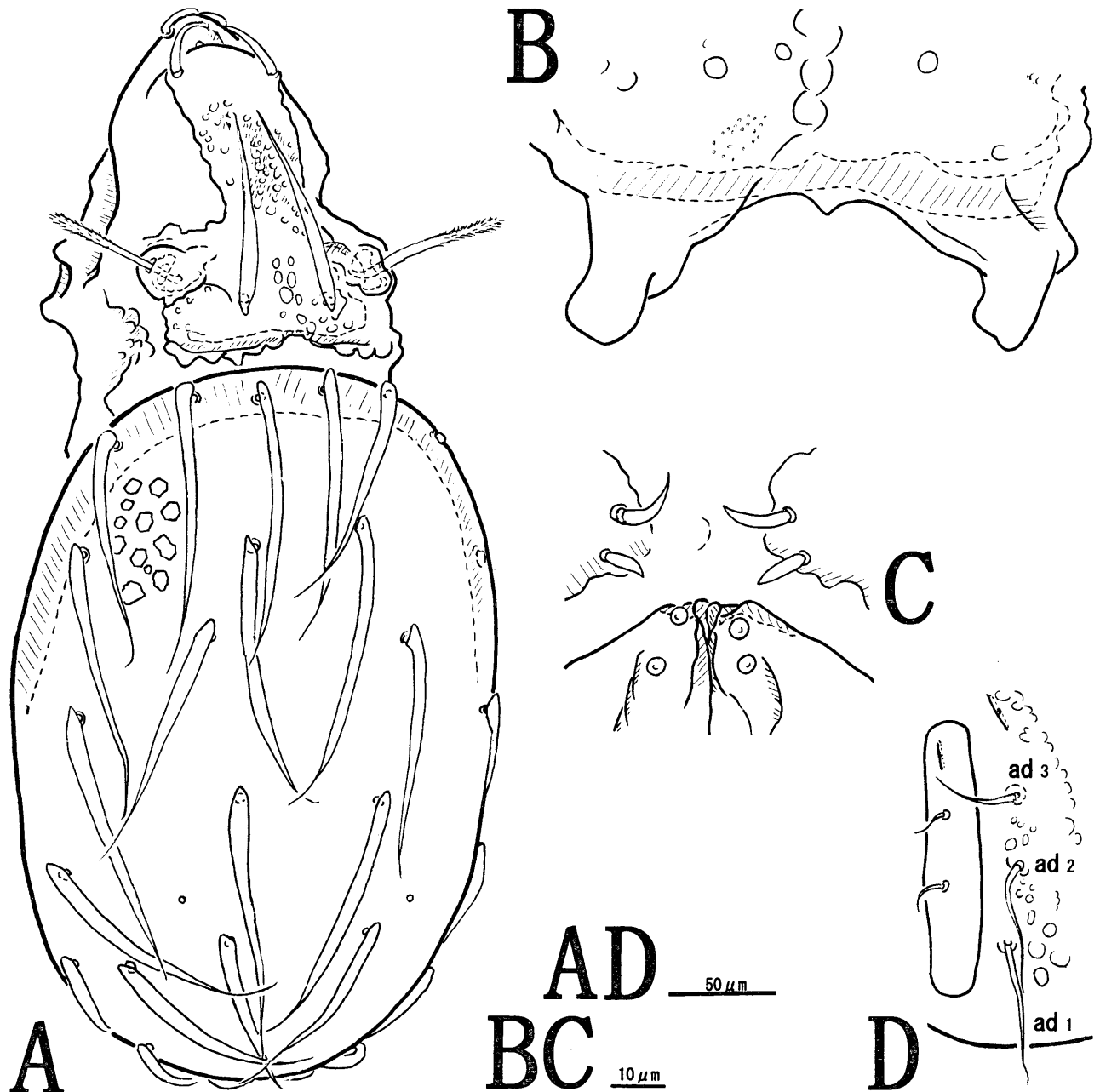


Fig. 1. A: *Nanhermannia angulata* sp. nov. Dorsal view. B and C: *Nanhermannia triangula* FUJIKAWA, 1990. B: Prodorsal condyles; C: Central portion of disjugal suture. D: *Nanhermannia bifurcata* FUJIKAWA, 1990. Anal-adanal region.

setae $4a$ shorter than the distance between $4a$ and $4c$, but longer than the distance $4a$ and $4b$. Anal setae an , adanal setae ad , genital setae g and aggenital setae ag setiform and smooth. Anal setae an_1 and an_2 almost equal in length, longer than the breadth of anal plate. Nine pairs of genital setae, g_1 – g_9 equal in length, almost as long as setae of an -series, longer than the breadth of genital plate.

Both aggenital setae, ag_1 and ag_2 longer than the distance between ag_1 and ag_2 . Infracapitular setae, a , m and h minutely barbed. Relative lengths: $ad > ag > 4b > g > an > h > 1a > a \doteq m$.

Legs: Chaetotaxy (including famulus, excluding solenidia); I (1–5–4–6–24), II (1–6–4–6–23), III (4–3–3–3–20), IV (1–2–3–3–20). Solenidium ω_1 longer than ft''

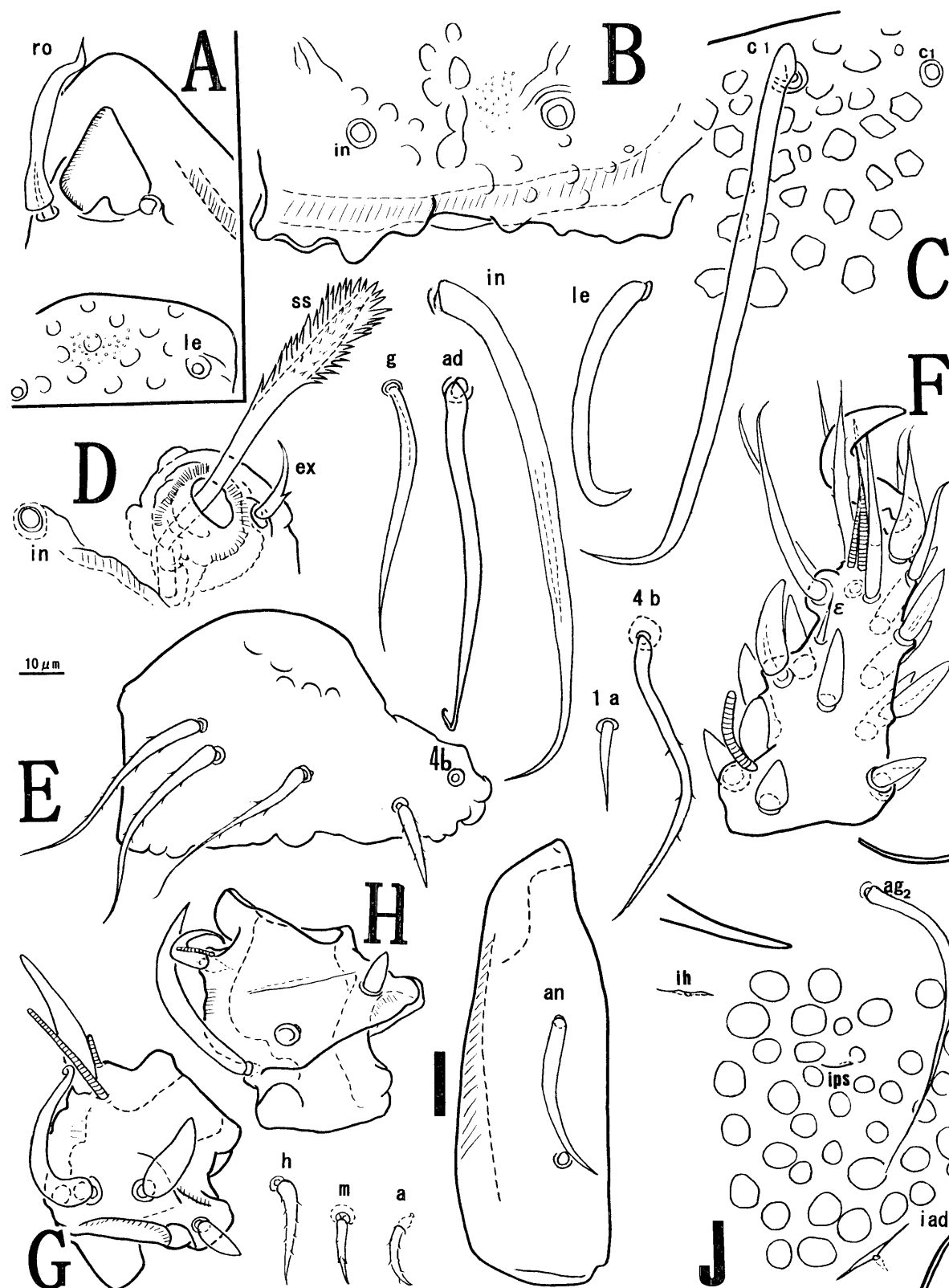


Fig. 2. *Nanhermannia angulata* sp. nov. A: Rostral region; B: Prodorsal condyles; C: Dorsal surface around setae *c*₁; D: Bothridial region; E: Epimeron IV bearing 5 setae abnormally; F: Tarsus I; G: Tibia I; H: Genu I; I: Anal plate; J: Area between anal and genital plates. Setae: Genital (g), adanal (ad), interlamellar (in), lamellar (le), epimeral (1a & 4b), and infracapitular (a, m and h) setae, respectively.

on tarsus I, ψ_1 and σ shorter than seta d on tibia I and genu I, respectively.

Material examined: Holotype (NSMT-Ac 11469), from FA, 2-X-1999; 2 paratypes (NSMT-Ac 11470): the same data with holotype.

Remarks: The new species is distinguished from other congeners by the shape of prodorsal condyles, notogastral areolae and principal setae (ro , ss , a , m , h) and the length of setae in .

Nanhermannia triangula FUJIKAWA, 1990
(Figs. 1 B & C)

Nanhermannia triangula FUJIKAWA, 1990, p.9, fig.5.

Supplementary description: Setae a of each epimeron and setae $4b$ short; the rest long. Setae $4a$ longer than the distance between $4a$ and $4b$.

Locality: 10 exs., from FA, 3-X-1999.

Measurements: Body length, 514 (537.1) 557 μm ; width, 221 (237.5) 250 μm .

Distribution: Nippon (*Picea glehnii* forest at Mo-Ashoro, Hokkaido).

Remarks: The present specimens have prodorsal condyles separated far from each other; the mutual distance is wider than that of the original description.

Nanhermannia bifurcata FUJIKAWA, 1990
(Fig. 1 D)

Nanhermannia bifurcata FUJIKAWA, 1990, p.5, figs. 1-4.

Locality: 16 exs. from PG, 6-XI-2000.

Measurements: Body length, 492 (500) 514 μm ; width, 228 (246.4) 257 μm .

Distribution: Nippon (*Picea glehnii* forest at Mo-Ashoro, Hokkaido).

Remarks: The present specimens differ from the original description in having long adanal setae ad_2 , namely, ad_2 as long as, or shorter in specimens from Mo-Ashoro, but about 1.5 \times as long as the distance between ad_1 and ad_2 in specimens from Mt. Hayachine.

Nanhermannia vernus sp. nov.
[Nipponese name: Satsuki-tsukinowadani]
(Figs. 3 A-B & 4)

Measurements: Body length, 564 (591.9) 621 μm ;

width, 271 (294.4) 328 μm .

Prodorsum: Prodorsal condyles medially separate. Setae ro and le thick, tapering to a fine tip, and longer than their own mutual distance. Setae in dilated with a small pointed projection at the base, and about 2 \times as long as their mutual distance. Sensilli spinose unilaterally. Setae ex smooth and simple. Relative lengths and distances: $in > ss \doteq le > ro > ex$; $(le-le) \geq (in-in) > (ro-ro)$.

Notogaster: Areolae on surface round. Dorsal setae mid-portion slightly expanded. Setae c_1 about 4 \times as long as their mutual distance, and about 2 \times as long as the distance between c_1 and d_1 .

Ventral region: Epimeral setae $1a-c$, $2a$, $3a$ and $4a$ short and smooth; the other setae long, sparsely barbed. Epimeral setae $4a$ shorter than the distance between $4a$ and $4c$, but longer than the distance between $4a$ and $4b$. Anal setae an_1 and an_2 almost equal in length, not longer than the breadth of anal plate. Genital setae g_1-g_9 equal in length, longer than that of genital plate. Adanal setae ad_1-ad_3 equal in length, with a short posterior spur. Both aggenital setae, ag_1 and ag_2 longer than the distance between ag_1 and ag_2 . Palp with minute cm and long v on tarsus, and minute d on tibia. Infracapitular setae h sparsely and minutely barbed; setae a and m smooth; h longer than a and m . Relative lengths: $ad > 4b > ag > g > h > an > a \doteq m > 1a$.

Legs: Chaetotaxy including famulus, but excluding solenidia; I (1-5-5-6-24), II (1-7-5-6-23), III (4-3-3-4-20), IV (1-2-3-4-18). Solenidion ω_1 somewhat longer than ft'' on tarsus I; ψ_1 as long as seta d ; seta d as long as about 2 \times solenidion σ on genu I; setae d on tibia I and genu I smooth.

Material examined: Holotype (NSMT-Ac 11471), from FA, 3-X-1999; 5 paratypes (NSMT-Ac 11472): the same data with holotype; 2 paratypes from FA, 2-X-1999; 21 paratypes from PG, 16-V-2000.

Remarks: The present species differs from other congeners in having separate prodorsal condyles, long dorsal setae, short setae $1a-c$, solenidia ω_1 and ψ_1 as long as the protecting seta, and leg chaetotaxy.

Nanhermannia hiemalis sp. nov.
[Nipponese name: Shimoyo-tsukinowadani]
(Figs. 3 C-D & 5)

Measurements: Body length, 535 (562.4) 585 μm ;

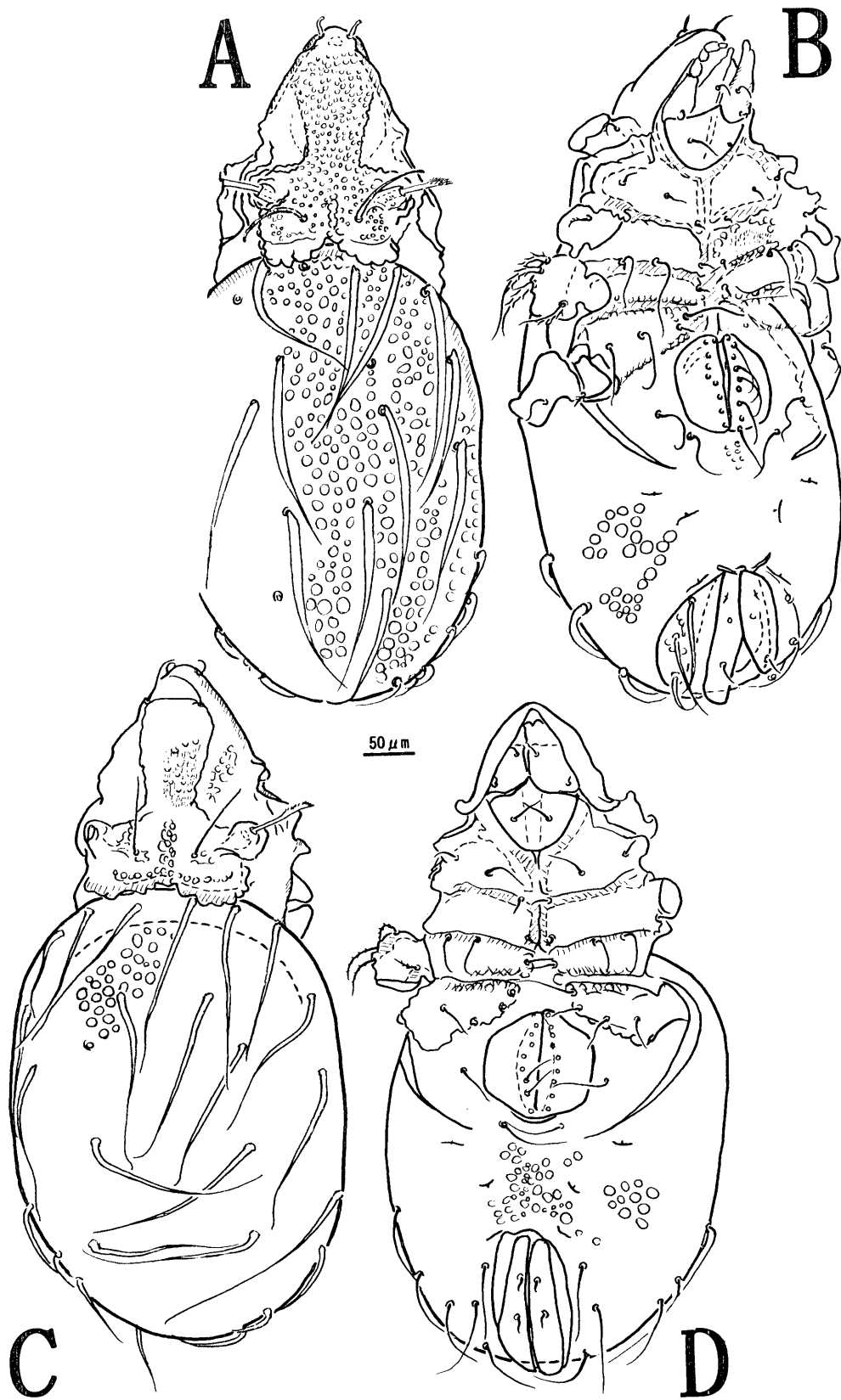


Fig. 3. A and B: *Nanhermannia vernus* sp. nov.; C and D: *Nanhermannia hiemalis* sp. nov., A and C: Dorsal view; B and D: Ventral view.

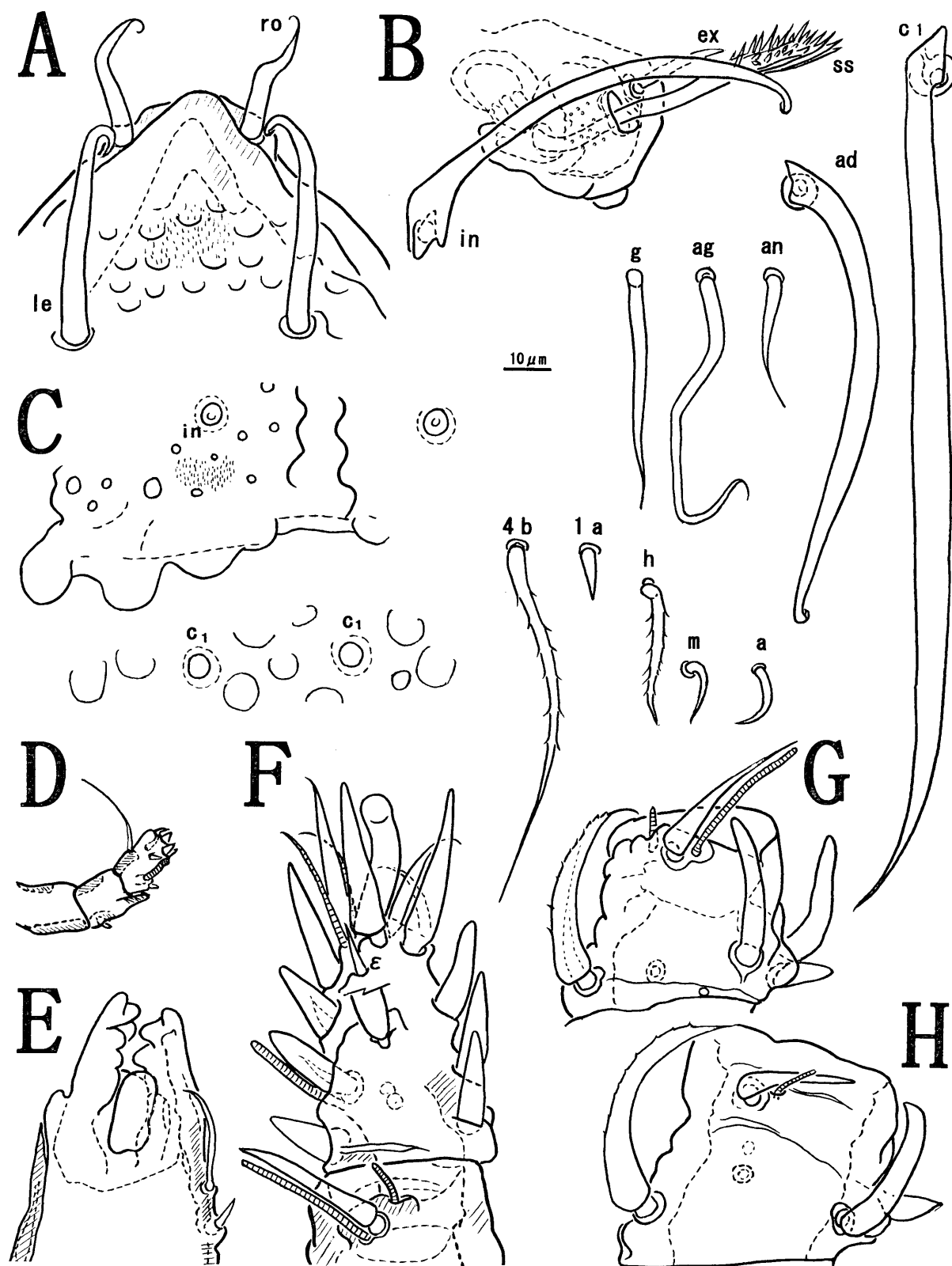


Fig. 4. *Nanhermannia vernus* sp. nov. A: Rostral region; B: Bothridial region; C: Prodorsal condyle region; D: Tarsus of palp; E: Chelicera; F: Solenidial region on tarsus and tibia of leg I; G: Tibia I; H: Genu I; Setae: dorsal seta (c_1), genital (g), aggenital (ag), anal (an), adanal (ad), epimeral (1a & 4b), infracapitular (a, m and h) setae, respectively.

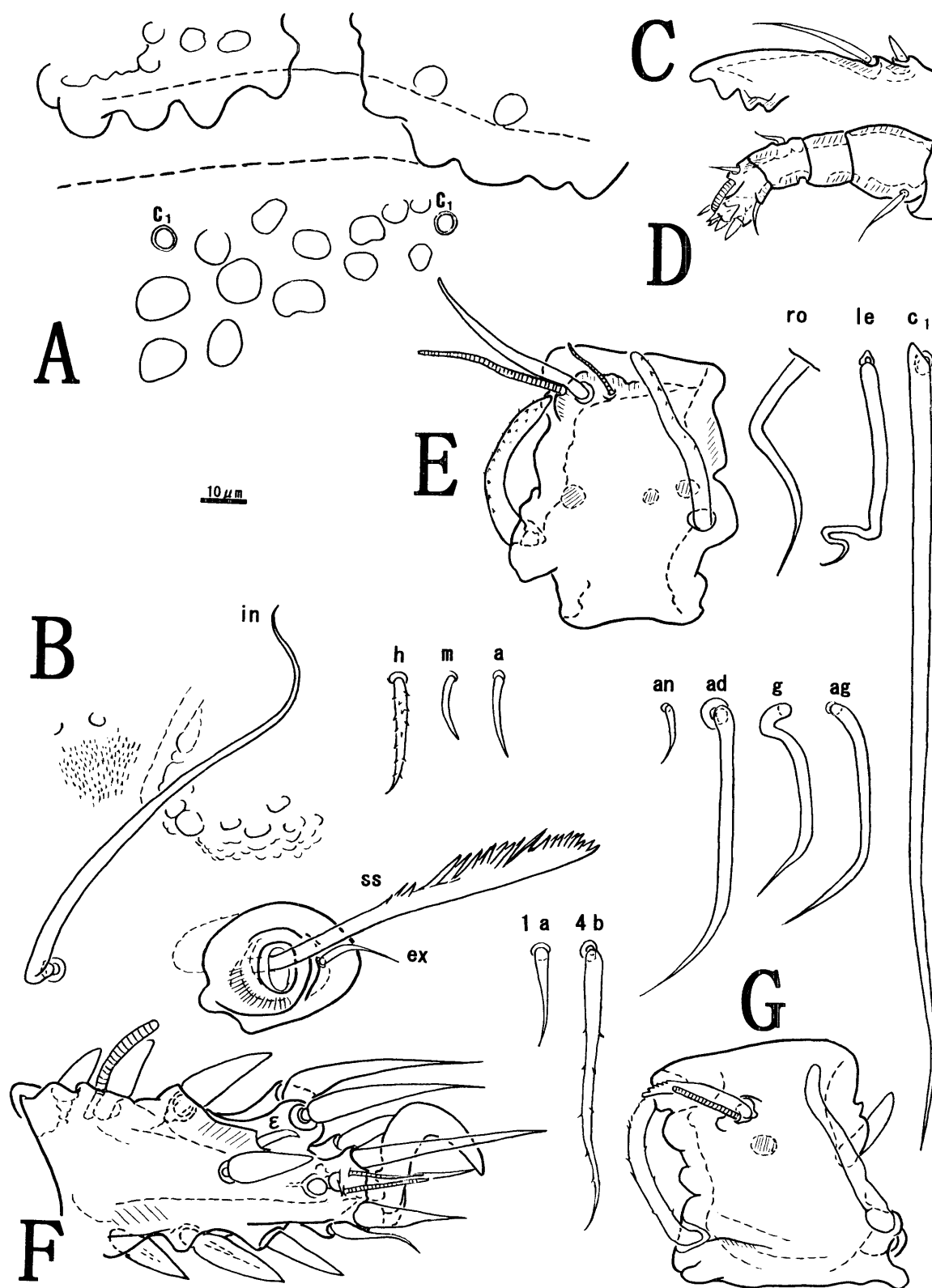


Fig. 5. *Nanhermannia hiemales* sp. nov. A: Prodorsal condyle region; B: Bothridial region; C: Part of chelicera; D: Palp; E: Tibia I; F: Tarsus I; G: Genu I. Setae: Rostral (ro), lamellar (le), dorsal (c_1), anal (an), adanal (ad), genital (g), aggenital (ag), epimeral (1a & 4b), infracapitular setae (a, m and h), respectively.

width, 250 (267.7) 300 μm .

Prodorsum: Prodorsal condyles medially separate. Setae *ro*, *le*, *in* and *ex* thin. Setae *ro* shorter than their mutual distance, but setae *le* and *in* longer. Sensilli spinose unilaterally. Setae *ex* simple and smooth. Relative lengths: $in > ss > le > ro > ex$.

Relative lengths and distances: $in \div 2 \times ro$; $(in-in) > (le-le) > (ro-ro)$.

Notogaster: Areolae on surface round. Setae *c*₁ about 3× as long as their mutual distance, and about 2× as long as the distance between *c*₁ and *d*₁.

Ventral region: Setae *a* of every epimeron smooth and shorter than the others which bear sparsely barbs. Anal setae and genital setae shorter than the breadth of their own plate. Both aggenital setae *ag*₁ and *ag*₂ shorter than the distance between *ag*₁ and *ag*₂. Infracapitular setae *h* minutely barbed, longer than *a* and *m* which are smooth.

Relative lengths: $ad > 4b > ag > g > h > a \div la > m > an$.

Legs: Chaetotaxy including famulus, but excluding solenidia; I (1–5–5–6–24), II (1–7–5–6–23), III (4–3–3–5–20), IV (1–2–3–5–18). Solenidion ω ₁ longer, ψ ₁ and σ shorter than the protecting seta. Setae *d* on tibia I smooth, but setae *d* on genu I roughened at tip.

Material examined: Holotype (NSMT-Ac 11473), from PG, 6–XI–2000; 1 paratype (NSMT-Ac 11474) and 49 paratypes: the same data with holotype; 28 paratypes from litter and humus at Jodo-ga-hama, Miyako-shi in Iwate prefecture, 15–XI–2000, T. FUJIKAWA.

Remarks: The new species is distinguished from other

congeners by length and thickness of prodorsal, dorsal, ano-genital and epimeral setae, insertion of setae *4a* and *4b*, and form of setae on genu I.

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摘 要

藤川徳子 (〒791-0203 愛媛県重信町横河原1375愛大横河原宿舎 1-115) : 日本産ツキノワダニ科の5種.

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青森県から, *Nanhermannia angulata* sp. nov., カドツキノワダニ (新称) と *N. triangula* FUJIKAWA, 1990, トガリツキノワダニ が, また岩手県から *N. hiemalis* sp. nov., シモヨツキノワダニ (新称) と *N. bifurcata* FUJIKAWA, 1990, エイツキノワダニが, そして両地から *N. vernus* sp. nov., サツキツキノワダニ (新称) の5種類を採集し記載した. これらの5種類は一見すると非常によく似ている. しかし, エイツキノワダニとトガリツキノワダニは先端の二分した吻毛によって他の3種類から簡単に見分けることができ, そして前体部後縁の突起物列の形と胴感盃毛の枝毛のつきかたによって両者を区別できる. 他の3種類のうちカドツキノワダニは胴感盃毛の枝毛のつきかたや後体部表面の凹状構造が角型で体は小さいので, 他の2種類と見分けられる. 残りの2種類は, 基節板毛 *4b* と *4a* の長さの比, 生殖門板毛の長さ生殖門板の幅との比, 及び第一脚膝節の *d* と σ の長さの比の違いによって区別することができる.

References

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